# Invertebrate Conservation

News

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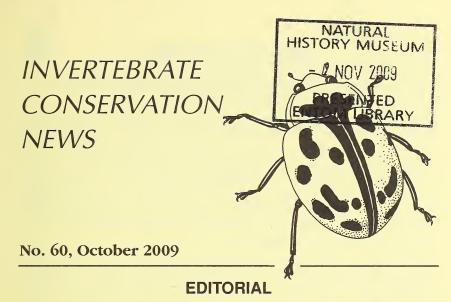
AES P.O. Box 8774 London SW7 5ZG

ICN Editor: David Lonsdale

AES Habitat Conservation Officer: Vacant

#### **AES Conservation Committee**

Dafydd Lewis David Lonsdale Peter May Phil Wilkins



In November 1979, ICN's precursor bulletin included an assertion that wildlife habitats were being inexorably destroyed or degraded and that conservation efforts consisted largely of damage-limitation. It is more exciting to think of conservation in a more positive context of habitat enhancement or creation, but it is worth bearing in mind that most of the world's species would thrive if human beings were to let them 'get on with it'. On the other hand, habitat creation is very worthwhile if it can partly compensate for some of the immense damage that human activities have caused.

Although the conservation movement has gained much support in the thirty years since the publication of our rather negative editorial comment, there has been an acceleration of habitat destruction, degradation and isolation in most parts of the world. It would, however, be unfair and disheartening to think of conservation as having achieved only a few local victories amidst an inexorable tide of defeat. Morale can usefully be boosted by positive initiatives such as 'habitat creation' schemes, some of which have contributed to recovery plans for species and habitats; for example under the UK Biodiversity Action Plan.

It is of course encouraging to see conservation schemes that purport to provide a nett gain for wildlife. On the other hand, the claims that are made for some of these schemes deserve to be viewed with a certain amount of scepticism. Perhaps there is even a tendency for such claims to reflect a false 'culture of success', in which no-one or nothing can be seen to fail or to fall short of past achievements. For example, as mentioned in the last issue of *ICN*, habitat creation schemes in the 2012 London Olympics developments are paraded in glowing terms, yet can be seen against a background of nett habitat loss.



The London Olympic project has been assisted by massive support from national government, which has even changed the law to allow some of the developments to go ahead. For other kinds of site development in the UK and other countries, somewhat more rigorous criteria are generally needed in order to obtain planning consent. One means of doing so is to demonstrate that a proposed development would bring some form of environmental gain. It seems inescapable that there are instances in which such a gain can be recognised only by under-valuing the habitats that already exist on many potential development sites. This is certainly alleged to have been the case in the London Olympic developments.

In places that have been over-exploited for human use, there are of course genuine prospects for positive conservation. Sites are sometimes purchased by individuals or organisations who are wealthy enough to buy and manage land primarily for conservation. They can enhance or create habitats with greater freedom and confidence of success than is feasible for commercial land managers. In some cases, conservation management involves taking land out of commercial production but there is often potential to continue to gain income from the land, using methods (e.g. traditional forms of grazing) that enable the restoration and enhancement of habitats.

Since commercially managed farmland or forests occupy so much of the world's land surface, they probably offer the greatest opportunities for habitat creation, restoration and enhancement. Enthusiastic landowners can achieve much with good advice and with funding to compensate them for foregoing a proportion of the income that might be achieved by maximising crop yields. Funding (in the form of agricultural subsidies) has, however, often encouraged commercial production at the expense of habitats. In the European Union, the system for funding has changed to some extent, so that member-states can now support stewardship of agricultural land and the habitats that it contains. UK experience indicates that the generally available level of stewardship (Entry Level Stewardship) achieves little more than to protect habitat-features that would be retained anyway. On the other hand, Higher Level Stewardship offers more scope for positive action, such as hedgerow restoration, but is available only in "high priority situations and areas" and only on a competitive basis.

We need to be wary of assertions about projects that purport to provide a nett gain for biodiversity, but we also need to be positive in looking for places in the landscape where there are genuine prospects for reversing some of the losses that have occurred as a result of overintensification, over-tidiness and the like.



# **NEWS, VIEWS AND GENERAL INFORMATION**

# Countryside access in England: impacts on vulnerable invertebrates

Matt Shardlow of Buglife – The Invertebrate Conservation Trust has drawn attention to a recent report, commissioned by the statutory agency Natural England, with the purpose of contributing to judgements and decisions about public access to land designated in England and Wales under the Countryside and Rights of Way Act, 2000.

The guidance includes specific information about invertebrates, provided by Adrian Fowles and David Sheppard. One of the concerns is that soils and vegetation can be affected by trampling to the detriment of invertebrates. On grassland and sand-dunes, there is evidence that trampling, even when light, can have significant effects on invertebrates. Also, dog-fouling often alters soil properties. Apart from the direct squashing of invertebrates, trampling compacts the soil, with a consequent impairment of aeration and alteration of other soil properties. Compaction is often confined to narrow paths, but it can occupy belts as much as 100 metres wide in the most popular areas. As hostile zones for various invertebrates, these wide 'paths' could act as barriers to the dispersal of the less mobile species.

Although trampling is often detrimental to invertebrates and other wildlife, the report acknowledges that moderate trampling can provide areas of bare soil (particularly sandy soil), which are required by various invertebrates, especially on heathland. There is also mention of species, such as the rare beetle *Bembidion humorale*, that require bare peat or that are favoured by short, open vegetation. In certain areas, such as fens or sand-dune, a little trampling can be of some benefit by suppressing rank vegetation, thus favouring light-demanding plants, such as orchids, and their associated invertebrates. The report concedes, however, that not enough is known about the effects of trampling or disturbance on fenland invertebrates.

In woodland, disturbance is thought to be significant only in certain areas that are sensitive or visited by moderate to high numbers of people. The sensitive areas include those with a fragile ground flora and those that support rare invertebrates, including vathrious butterflies and species associated with deadwood. The latter could be harmed by the disturbance of logs or possibly by the collection of very rare species, but the report states that no evidence of these possible effects is available.



On the wider question of collecting, the report points out that, despite the sensitivity of this issue, there is thought to be little risk to invertebrates, except perhaps some of the rarest species. Also, the report states that there is no evidence that rare species might be threatened by collectors more on open-access land than in areas where access is via footpaths only. The reasoning behind this is that "the really determined will seek out their quarry wherever it lives". There is, however, some concern about the effects of collecting or disturbance on species that are nationally rare, attractive to collectors or photographers (who fail to comply with the appropriate codes of conduct) or dependent on particularly fragile habitats.

In order to mitigate the adverse effects of access, especially trampling of the soil and vegetation, the options include costly restoration schemes and/or the restriction of access. The report states, however, that restrictions are rarely appropriate, with possible exceptions in the most sensitive areas. These include wetlands such as lowland raised mires or saltmarsh interspersed with muddy creeks, where the majority of visitors would not wish to walk in any case. Aquatic invertebrates, such as crayfish and freshwater pearl mussels, are thought to be affected by disturbance of the banks of watercourses, but only where erosion is severe.

In sensitive areas, such as fragile wetlands and certain dune areas, waymarking and/or boardwalks are suggested as a means of ensuring that most visitors keep to paths without any need for legal enforcement. Similarly, alternative paths could be constructed in order to encourage people to avoid especially sensitive sections of riverbank. There is, however, a suggestion that enforced exclusion from certain areas might be appropriate at times; for example, where there are sole surviving colonies or where re-establishment trials are in progress. Another perceived problem is the risk of visitors being harmed by falling trees or branches. It is suggested that owners of access land should therefore inspect trees, but it is also pointed out that they are not placed under a duty of care in respect of risks posed by trees and other natural features.

Although the report deals mainly with public access, it also mentions that 'official activities' can be harmful to invertebrates. In coastal areas, certain local authorities regularly clean the beaches to remove seaweed and tidal flotsam. This activity has been found to remove the invertebrates that live in such material and that would (apart from their own conservation value) provide food for birds. Also the accompanying compaction reduces the availability of sand for dune formation.



Towards the end of the section on invertebrates, an interesting observation is made. This is that a statutory right of open access may enable further invertebrate survey work to be done. This is a very positive note on which to end this brief account of the report.

#### Reference

Anon (2009). Countryside and Rights of Way Act, 2000 Part 1: Access to the Countryside. Natural England Commissioned Report NECR012 (available from the Natural England website).

#### Neonicotinoid pesticides: proposal for a ban in the UK

Buglife – The Invertebrate Conservation Trust, with other organisations, is calling for a ban on neonicotinoid pesticides in the UK. These are a comparatively new group of neurotoxic, synthetic analogues of nicotine, that are used to coat agricultural seeds and to treat potted plants. They can also be used in spray formulations or added to soil. Being systemic, they spread throughout the plant, giving protection against insect pests, but also contaminating pollen and nectar, which could thereby be harmful to bees and other insects. Beekeepers and bee research workers suspect that neonicotinoids might be involved in current declines of bee populations. Research is in progress to investigate the matter and, in the meantime, full or partial bans of some of these chemicals have been imposed in certain European countries, including France, Germany, Italy and Slovenia.

Buglife has recently circulated a report, based on a study of the all scientific findings available on the Internet. These include evidence that the ingestion of nectar and pollen contaminated with imidacloprid (the commonest neonicotinoid) is associated with reduced foraging activity and fecundity in bees. There is also evidence that imidacloprid contamination of rivers can be sufficient to cause deformities in mayflies.

In view of the evidence, Buglife, the Soil Association, the Pesticides Action Network and the Bumblebee Conservation Trust are calling for the suspension of all UK approvals for products containing neonicotinoids that are used outdoors. In this context, the Buglife report cites the relevant Directive of the European Union (No. 91/414), which states that "Member States shall ensure that a plant protection product is not authorized unless.....it has no unacceptable influence on the environment."



The above organisations are also calling for a review of all neonicotinoid approvals and for the adoption of more comprehensive methods for assessing the effects of pesticides on non-target invertebrates when products are considered for approval. The Buglife report concludes that the current methods are inadequate, particularly with regard to the assessment of sub-lethal effects (a suspected factor in the reduction of invertebrate-abundance; see the editorial of *ICN* 59). The procedure includes toxicity tests that are undertaken on several invertebrate species that have been selected as sensitive indicators, but Buglife believes that the tests do not reflect the effects of continued low-level exposure, such as occurs when bees and other insects come into contact with contaminated pollen and nectar.

According to the Buglife report, there are flaws in the assessment procedure, by which a company that wishes to register an active substance has to prepare a 'Draft Assessment Report' (DAR). This provides test results for acute and chronic toxicity, as well as sub-lethal effects, in order to ascertain the environmental risk posed by the active substance. The substance can be included in an EU-approved list if the tests indicate that it meets certain criteria, including the need not to have any "unacceptable influence on the environment", particularly with regard to its impact on non-target species. The decision whether to approve products for use is the responsibility of each EU member-state, according to a set of principles, which includes the need to evaluate effects on aquatic organisms and honeybees. One of the problems identified by Buglife is that some of the DAR tests did not seek to detect neonicotinoids in pollen or nectar at concentrations too low to harm bees in the toxicity tests, but high enough to cause chronic sub-lethal effects.

The compiled evidence is clearly a cause for serious concern. There is, however, a need to bear in mind that other pesticides, that can be applied only by spraying, can also be very harmful to non-target invertebrates, including those that feed on pollen and nectar. Also, the amount of a systemic pesticide that is applied via a seed coating is probably smaller and is more accurately targeted than can be achieved by crop-spraying. On the other hand, as mentioned in the Buglife report, some of the seed coating enters the soil and a proportion can be dispersed as dust or in runoff, thus contaminating vegetation or watercourses. Also, the neonicotinoids are highly persistent, as is required in systemic products applied as a seed coating. Evidence quoted by Buglife indicates that, with some variation according to environmental conditions, imidacloprid has a half-life of approximately 1,000 days in soil and more than a year in water. This means that residues are absorbed by subsequent crops.



Responses from the regulatory authorities and the pesticides industry should be interesting; we hope to comment on them in a future issue of *ICN*.

#### Reference

Kindemba, V. (2009). The impact of neonicotinoid insecticides on bumblebees, Honey bees and other non-target invertebrates. Buglife – The Invertebrate Conservation Trust, Peterborough, UK

#### Forestry Commission (England): proposed open habitats policy

The Forestry Commission plans to remove woodland from priority habitats, such as lowland heath, across the public forest estate in England. The Commission has recently been running a public consultation on proposals to remove between 5,600 and 30,000 hectares of woodland – typically "poor quality conifers and recent secondary broadleaved woodland" – over the next 15 years. The intention is not to reduce the tree cover of the UK as a whole (an important issue in relation to the low-carbon economy), and so there would be funding for compensatory planting if necessary.

The proposals are important in relation to invertebrate conservation, since there are many species that depend on open habitats and that have suffered loss of habitat owing to the growth of trees on former grassland and heathland. On the other hand, the trees provide habitats that are not provided by the grassland or heathland plants. They also provide shelter from wind, thus helping the development of the hot micro-climates that various invertebrates need. Furthermore, logs and stumps can serve as overwintering sites and as floating refugia during times of flood.

An open habitats policy has the potential to improve conditions for a wide range of invertebrates, but it will need to be developed sensitively, so as to provide structural diversity. We hope to report the results of the consultation when they are published.

# Misleading claims about ragwort

As reported in earlier issues of *ICN*, there was considerable debate in the UK when legislation was being drafted in order to create new obligations for landowners to control ragwort *Senecio jacobaea*, where it might endanger livestock by poisoning. There was concern that scientifically unfounded claims about alleged cases of poisoning could lead to the adoption of excessive measures to control a plant which is



important for many invertebrate species and essential for thirty of these in the UK. Eventually, the Ragwort Control Act 2003 enabled such control in certain circumstances, mainly relating to the distance from land where livestock is being kept (see *ICN* 43). There have, however, been many attempts to force landowners to control ragwort much more widely; for example where it is growing far beyond the minimum distances stated in the Act.

Neil Jones has been drawing attention to various items of inaccurate information that are being disseminated not only by anti-ragwort campaigners but even by local authorities. Some items are tempered by statements that ragwort is a good thing in the appropriate place, giving the overall impression of a well balanced approach. For example, the Countryside Alliance Weekly e-newsletter of 6th August 2009 includes a "Ragwort Alert", in which Simon Hart, the Alliance's Chief Executive, rightly points out that ragwort "plays an important role in the countryside; it supports a wide variety of invertebrates and is a major nectar source for many insects". However, he goes on to write .. "By law, all Local Authorities and public bodies who own land must control their ragwort". He adds that many local authorities responded positively last summer when the Alliance urged them to control their ragwort.

Although the Countryside Alliance's alert might look balanced, it is misleading because there is no legal duty for local authorities or other public bodies to control ragwort on their land. There are only discretionary powers that can be invoked in cases where the criteria for control are met.

Many other inaccurate or misleading claims about ragwort have been compiled by Neil Jones. These include a BBC web page (reference below), entitled "Conservation Hero". The page concerns a volunteer, Lucie Cowles, who came to Dorset from London five years ago. She is said to give up a day each month to chop down brambles and pull up weeds at Fontmell Down, a "haven for wildflowers and butterflies". The report does not include any attempt to define a weed in the context of the site, but there is said to be a constant threat of the site "being overrun by blackthorn and ragwort, a poisonous weed".

The use of the term "in fact" is rather unfortunate in the following phrase... "Ragwort looks like a harmless flower but it can poison livestock. In fact, it's even a legal requirement for landowners to pull it up". Despite the alleged "fact", there is no such legal requirement; only the discretionary provision that is mentioned above.



Further information about inaccurate statements about ragwort can be found in an interesting website, which lists and explains some "Common myths about ragwort" (reference shown below) In each case the origin of the myth (or falsehood) is explained.

#### References and further reading:

http://www.wildaboutbritain.co.uk/forums/wildflowers-plants-and-tree-forums/14973-ragwort-illegal.html

http://www.bbc.co.uk/dorset/content/articles/2007/07/17/conservation\_feature.shtml http://www.buglife.org.uk/conservation/currentprojects/Habitats+Action/Ragwort/ragwortfactfile.htm

http://www.ragwortfacts.com/ragwort-myths.html



## SITES AND SPECIES OF INTEREST

#### Dungeness, Kent: further information

An article in *ICN* 59 mentioned the proposed development of a third nuclear power station at Dungeness, a shingle foreland with an exceptional invertebrate fauna on the south-east coast of England. The *ICN* article regrettably omitted to point out that much of the survey data on invertebrates at Dungeness has been provided by Butterfly Conservation (BC). Mark Parsons, Head of Moth Conservation at BC, has kindly provided some information about this survey work, which includes a study of the legally protected Sussex Emerald moth *Thalera fimbrialis*.

As far as *T. fimbrialis* is concerned, a survey in 2008, conducted for BC by S.P. Clancy, showed signs of a decline in the number of larvae at 23 annually surveyed sites within the compound of the existing power stations and along the verges of the approach road to the stations. At some of these sites, larvae no longer occur but were present in good numbers in the early 1990s. The survey also included larvae and adults outside the compounds and away from the approach roads. As far as comparisons could be made, there seemed to be a recovery in larval numbers after a poor season in 2007, but relatively few adults were detected, owing to windy conditions.



Mark Parsons has also provided a copy of BC's submission to the consultation. In this, BC points out that the footprint of the proposed power station impinges on the Site of Special Scientific Interest and Special Area of Conservation. It also takes in habitat currently and recently occupied by *T. fimbrialis* within its sole UK breeding area.

BC's submission observes that the proposed boundary, excluding the approach road, extends beyond the existing compound of the two existing nuclear power stations, thus including intact shingle ridges, an important geomorphological feature. The Nottingham Catchfly Silene nutans, a very localised plant, grows within the proposed extension and supports a population of the White Spot moth Hadena albimacula which, like T. fimbrialis, is a UK Biodiversity Action Plan species. It is also listed as Red Data Book 2 (Vulnerable). Another moth associated with the same plant in this area is the extremely rare case-bearing micro-moth Coleophora galbulipennella (a provisional Red Data Book 1, Endangered species), which is known only from one other site in the UK. BC adds that this part of Dungeness also supports various scarce and threatened moths associated with Viper's Bugloss Echium vulgare, including Ethmia terminella, E. bipunctella, Cynaeda dentalis and Tinagma balteolella, as well as the weevil Ceuthorrhynchidius geographicus.

BC points out that at least 465 species of larger moth have been recorded within this part of Dungeness over the last twenty years. These include many other nationally scarce and threatened species, such as the Pale Grass Eggar Lasiocampa trifolii flava, the Pigmy Footman Eilema pygmaeola pallifrons, both of which are largely restricted to Dungeness within the UK, the Light Feathered Rustic Agrotis cinerea and the Toadflax Brocade Calophasia lunula.

BC expresses concern about the more general effects of the proposed development, some of which were mentioned in *ICN* 59. These include the impact of constructing new transport facilities by road, rail and sea. BC believes that these extra developments could further remove shingle habitat and/or alter existing plant and animal communities. There is also concern about the continuing decommissioning of Dungeness A Power Station and the possible decommissioning of Dungeness B, which could be under way by the time of the proposed development. In BC's view, the resulting increase in traffic within this fragile ecosystem has the potential to cause additional damage to populations of a wide range of scarce and threatened species, particularly if the shingle vegetation is damaged.



BC mentions the idea of mitigating damage that would be caused by the proposed developments but considers that there is little scope for doing so, except perhaps for a very few species among the wide range of scarce and threatened species. The submission ends with the important consideration that another extensive area of vegetated shingle, The Crumbles, near Eastbourne, Sussex, has been largely lost to development in recent years.

#### Hines Emerald Dragonfly in the USA

Hines Emerald Dragonfly *Somatochlora hineana* is the only dragonfly on the USA's federal endangered species list. It is recognised as endangered by the International Union for the Conservation of Nature and a number of mid-western states. The adult is approximately 2.5 inches (65 mm) long with a 3.5-inch (90 mm) wingspan. It has a dazzling metallic green body with yellow stripes and its eyes are emerald-green. Its wings have a creamy colour. It can only be found in small areas of Illinois, Michigan, Wisconsin, and Missouri but used to occur also in Ohio, Alabama and Indiana. The larval habitat occurs in spring-fed marshes and meadows with high calcium concentrations in the water. Most of these wetland habitats have been drained for urban and industrial development.

Various elements of the critical habitat have been identified. The soils are organic (histosols, or with organic surface horizon), overlying calcareous substrate (predominantly dolomite and limestone bedrock). The water is calcareous, emanating from intermittent seeps and springs and associated shallow, small, slow flowing streamlet channels, rivulets, and/or sheet flow within fens. The vegetation includes emergent herbaceous and woody plants for emergence and refugia. Also the larvae require crayfish burrows for winter refugia and an assemblage of prey species, including mayflies, aquatic isopods, caddisflies, midge larvae, and aquatic worms. The adults require natural plant communities near the breeding/larval habitat, which may include fen, marsh, sedge meadow, dolomite prairie, and the fringe of bordering shrubby and forested areas with open corridors for movement and dispersal. They also require prey populations of small, flying insect species such as Diptera.

The dragonfly is one of various rare insects that have caused controversy in the USA, where listing under the Endangered Species Act can lead to severe restrictions on land-use. The species was listed in 1995 but the listing was not accompanied by measures to protect the dragonfly's habitat. The relevant authority (the Fish and Wildlife



Service) pleaded a lack of the necessary scientific knowledge. The Center for Biological Diversity recalls that, in 2004, it led a coalition of regional environmental groups in filing a lawsuit, which resulted in a court order that required the Fish and Wildlife Service to designate critical habitat. The designation, which was finalised in 2007, did not satisfy the environmental groups, who challenged a decision to exclude national forest land in Michigan and Missouri from the designated areas.

In January this year, according to a press release from the Natural Resources Defense Council, the challenge culminated in a settlement between the environmental groups and the federal government. This requires the government to reconsider the decision to exclude the national forest lands from the designated areas of critical habitat. These comprise 13,000 acres (5,250 ha) in Michigan's Hiawatha National Forest and the Mark Twain National Forest in Missouri. The areas in question are said to contain some of the most important vestiges of the dragonfly's habitat.

The agreement has immediate effect in extending protections, pending the outcome of a public consultation on the further designation of critical habitat. Some of the arguments have already been aired during a consultation on the earlier designation. These include the criticism that the recovery plan for the species was developed in 2001, when relatively little was known about the sites where it occurs in Missouri. Owing to a continuing lack of survey data, there could be sites that are essential for supporting a metapopulation of the dragonfly and yet are not known. The same uncertainty applies to areas that might be important as dispersal corridors.

With regard to economic conflicts, there has been debate about timber cutting (which could benefit the dragonfly in certain circumstances or be harmful in others), a sprinkler project in the Hiawatha National Forest, the drilling of wells into aquifers, a mining operation in Illinois and the operation of a railway, a planned highway and a State snowmobile trail system. The planned highway would be elevated in critical areas to reduce impacts between vehicles and flying adults. There would be speed restrictions placed on the existing railway for the same purpose. Also, there is concern that sediment being released from the railway ballast could be damaging the larval habitat. The mine is unlikely to be included in the designated areas. As far as the snowmobile trail is concerned, it has been pointed out that its use, during the winter, does not affect the dragonfly, as adults are not flying and the larvae are overwintering in crayfish burrows in wetlands.



#### LITERATURE REVIEW

#### Foodplant leaflets from Butterfly Conservation

Butterfly Conservation has recently published two attractively illustrated A4 glossy leaflets on key foodplants of moths and other insects: goldenrod *Solidago virgaurea* and aspen *Populus tremula*. Both leaflets include introductory information about the plants and their distributions in the UK. The reverse side of each leaflet shows information on site management, explaining how to protect the foodplants and to maintain a diverse vegetation structure for the benefit of the dependent insects. There is also information on techniques for surveying and monitoring the insects.

The goldenrod leaflet states that about 40 species of moth (in the UK) have been reported as feeding on this plant, of which nine feed on it exclusively or almost so. The moths include the declining Whitespotted sable moth *Anania funebris* and four plume moths, including *Hellinsia chrysocomae*, of which the UK populations are now thought to be restricted to Kent. The leaflet also mentions various flies that are associated with goldenrod, including some very rare leaf mining agromyzids.

The leaflet on aspen explains that it is an important foodplant for nearly 50 species of moth, of which several feed only occasionally on other foodplants, while two feed solely on aspen, these being the Scarce aspen midget *Phyllonorycter sagitella* and the Scarce aspen knot-horn *Sciota hostilis*, both are listed in the UK Biodiversity Action Plan. The leaflet also mentions the leafhopper *Idiocerus tremulae* and various uncommon or rare beetles, including the Poplar leaf rolling weevil *Byctiscus betulae*, which is illustrated.

#### CORRIGENDUM

## Invertebrate surveys in the UK

The editorial in *ICN* 59 mentioned the long-term monitoring studies of various invertebrate taxa in the UK, with the general conclusion that additional studies are needed. Matt Shardlow, Chief Executive of Buglife, has pointed out that there are other studies that ought to have been mentioned for the sake of completeness. These include the Environment Agency's river monitoring (undertaken at family level only for the assessment of biological river quality), the Rothamsted Aphid Survey and the Environmental Change Network monitoring of ground beetles.

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#### NOTICE

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